N60200.AR.009014
NAS CECIL FIELD
5090.3a

SAMPLING AND ANALYSIS REPORT FACILITY 200 BASE REALIGNMENT AND CLOSURE ZONE D INDUSTRIAL AND FLIGHT LINE AREA NAS CECIL FIELD FL

9/1/1998

HARDING LAWSON ASSOCIATES

SAMPLING AND ANALYSIS REPORT

FACILITY 200

BASE REALIGNMENT AND CLOSURE

ZONE D, INDUSTRIAL AND FLIGHT LINE AREA

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Unit Identification Code: N60200

Contract No.: N62467-89-D-0317/090

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
EBS	environmental baseline survey
ELCR	excess lifetime cancer risk
FDEP	Florida Department of Environmental Protection
GCTL	groundwater cleanup target level
HI	hazard index
HLA	Harding Lawson Associates
HQ	hazard quotient
$\mu g/\ell$	micrograms per liter
NAS	Naval Air Station
PRE	preliminary risk evaluation
RBC	risk-based concentration
SAO	sampling and analysis outline
SCTL	soil cleanup target level
TMP	tank management plan
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound

1.0 INTRODUCTION

Harding Lawson Associates (HLA), under contract to the Southern Division, Naval Facilities Engineering Command, has completed the Phase II Sampling and Analysis program for Facility 200 at Naval Air Station (NAS) Cecil Field. This report summarizes the related field operations, results, conclusions, and recommendations of the Phase II investigation.

Facility 200 is located on "C" Avenue directly west of B Circle at NAS Cecil Field (Figure 1). It is referred to as the Hobby Shop in the Environmental Baseline Survey (EBS) Report (ABB Environmental Services, Inc. [ABB-ES], 1994a). Facility 200 houses a hobby shop and the administrative headquarters for the Morale, Welfare, and Recreation staff. The hobby shop is located at the southern end of the building and contains a welding area, a spray painting booth, and several bays for working on automobiles.

Facility 200 was color-coded Grey in the EBS because of the potential for leakage from a waste-oil underground storage tank (UST) located at the south end of the building. The EBS also documented the presence of an oil-water separator on the east side of Facility 200. The oil-water separator is connected to floor drains in the work area and car washing area of the hobby shop, and also serves Facility 203. Facility 203 is an engine overhaul facility associated with the hobby shop. Floor drains in Facility 203 discharge to the oil-water separator. Water passing through the oil-water separator is piped to the sanitary sewer system. A review of facility drawings indicates there is a 500-gallon capacity waste-oil storage UST connected to the oil-water separator east of Facility 200. In addition to these concerns, oil stains were also observed inside the maintenance bays and on the adjoining concrete pavement.

A sampling and analysis outline (SAO) for assessment of groundwater downgradient of the oil-water separator, and surface water and sediment in the drainage ditch west of the facility, was prepared by HLA (then ABB-ES) and approved by the Base Realignment and Closure cleanup team (ABB-ES, 1995a).

The waste oil UST at the south end of Facility 200 was evaluated separately, in accordance with the Tank Management Plan (TMP) (ABB-ES, 1997a). The waste-oil UST was removed in 1997. Confirmatory sampling at the former UST site did not encounter excessively contaminated soil; however, the Confirmatory Sampling Report (ABB-ES, 1997b) recommends installing a temporary groundwater monitoring well, and collection and analysis of one groundwater sample.

A separate assessment of soil and groundwater in the vicinity of the oil-water separator and associated UST has also been completed in accordance with the TMP. Excessively contaminated soil was encountered adjacent to the oil-water separator during confirmatory sampling; however, groundwater was not impacted (ABB-ES, 1997c).

2.0 PHASE II INVESTIGATION

This Phase II investigation included the installation of one shallow groundwater monitoring well, and collection and analysis of one groundwater sample, one surface water sample, and one sediment sample. Field activities were undertaken in general conformance with the Project Operations Plan (ABB-ES, 1994b).

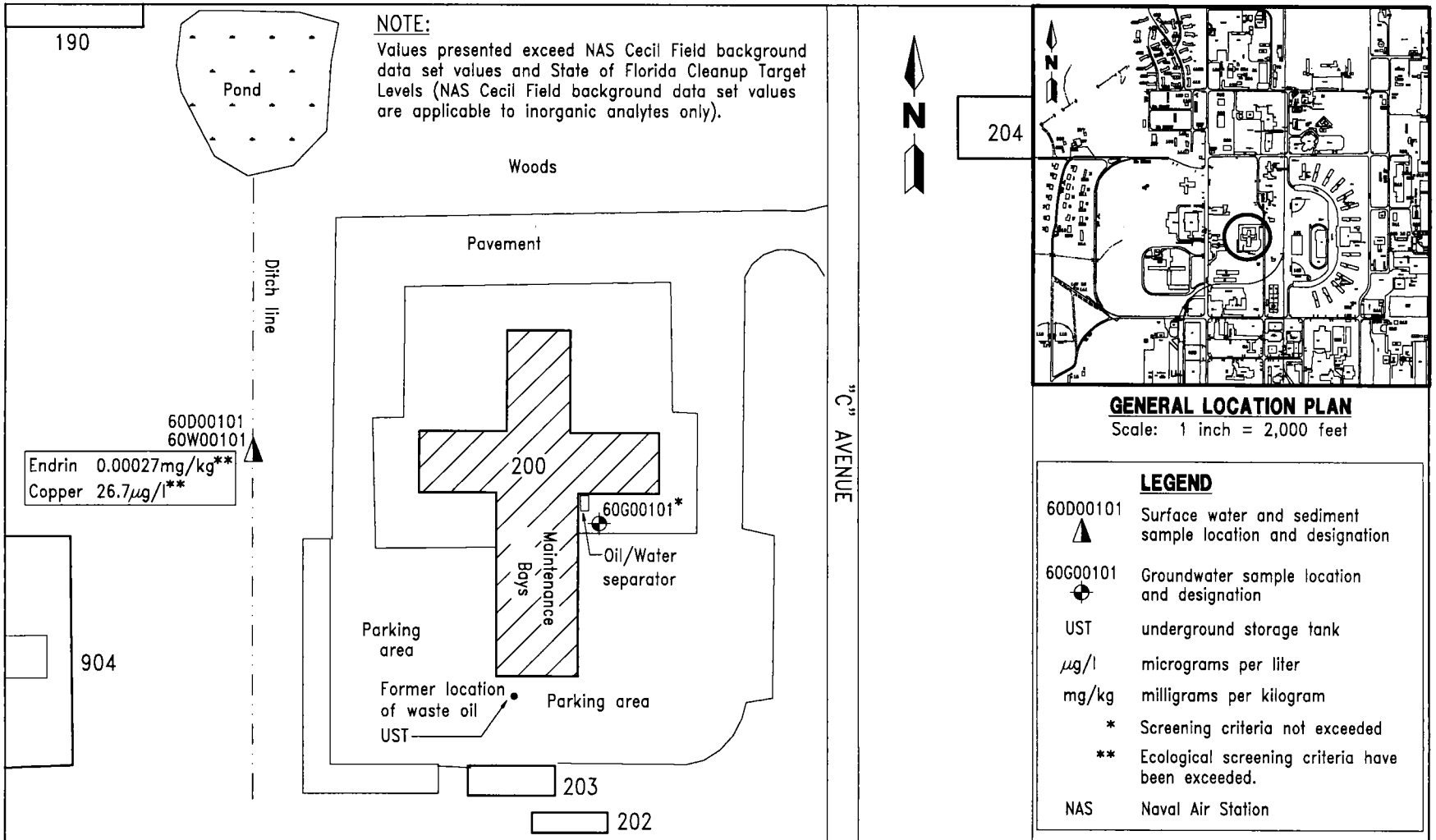

FIGURE 1
FACILITY 200 - HOBBY SHOP
SAMPLE LOCATION PLAN

SAMPLING AND ANALYSIS REPORT

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

The groundwater flow direction in this area can not readily be determined from the groundwater flow model produced for NAS Cecil Field by the U.S. Geological Survey. Based upon physical constraints at the site, the groundwater monitoring well was installed adjacent to the southeast corner of the oil-water separator. The well was completed at a depth of 13 feet below land surface.

One groundwater sample was collected from the monitoring well. Surface water and sediment samples were collected from the drainage ditch west of Facility 200, an area likely to intercept potentially contaminated surface water runoff from the oil-stained pavement.

All samples were analyzed for the full Contract Laboratory program suite of target compound list organics and target analyte list inorganics. A site plan indicating the location of the sample locations is presented on Figure 1. The soil boring log for the monitoring well is included in Appendix A.

3.0 PRELIMINARY RISK EVALUATION

A preliminary risk evaluation (PRE) was conducted to assess potential risks to human and ecological receptors posed by contaminants in groundwater, surface water, and sediment. Primary exposure pathways were evaluated to determine those pathways that potentially contribute to human health and ecological risks. The evaluation was conducted in general conformance with methodology provided in the U.S. Environmental Protection Agency (USEPA) Region IV memorandum entitled "Amended Guidance on PREs for the Purpose of Reaching a Finding of Suitability to Lease (FOSL)" (USEPA, 1994), USEPA Region IV bulletins on ecological risk assessment (USEPA, 1995), and minutes of meetings with the USEPA and the Florida Department of Environmental Protection (FDEP) concerning PREs (ABB-ES, 1995b). Site background information and rationale for sample collection and analysis are detailed in the Environmental Baseline Survey Report (ABB-ES, 1994a) and the SAO (ABB-ES, 1995a).

Inorganic analytes were compared to NAS Cecil Field screening criteria for inorganics established by the NAS Cecil Field partnering team. The NAS Cecil Field screening criteria were determined by using the nonparametric upper-outside value cutoffs as described in *Understanding Robust and Exploratory Data Analysis* (Hoaglin et al., 1983). These screening values were developed from data collected throughout NAS Cecil Field. No risk evaluation is conducted for inorganic analytes detected below NAS Cecil Field screening criteria for inorganics.

3.1 PUBLIC HEALTH PRELIMINARY RISK EVALUATION

. No exposure pathways to surface water or sediment were identified for human receptors. Therefore, this public health PRE only addresses potential effects associated with human exposure to groundwater.

All detected analytes were compared to readily available risk-based screening values to assess the likelihood of adverse human health effects associated with potential exposure to groundwater. Risk-based screening values were obtained from USEPA Region III Risk-Based Concentrations (RBCs) (USEPA, 1998) and FDEP Groundwater Cleanup Target Levels (GCTLs) (Florida Administrative Code, 1998).

Most screening values published in the references listed above are based on toxicity constants and standard human exposure scenarios and correspond to fixed levels of risk. The designated level of risk for noncarcinogenic chemicals is based on a hazard quotient (HQ) of 1. The level of risk for carcinogenic chemicals is based on an excess lifetime cancer risk (ELCR) of 1×10^{-6}. Cancer and noncancer risks associated with industrial and residential land use are estimated by dividing the maximum detected analyte concentration by the corresponding USEPA Region III RBC value at the designated level of risk (HQ of 1 or ELCR of 1×10^{-6}). For noncarcinogens, the HQs are summed to determine the cumulative noncancer risk or hazard index (HI).

Eleven inorganic analytes and 2 volatile organic compounds (VOCs) were detected in the groundwater sample collected in the study area. Both of the VOCs detected, acetone and bis(2-ethylhexyl)phthalate, are common artifacts of the laboratory environment and were not detected at concentrations in excess of GCTLs. No inorganic analytes were detected at concentrations in excess of NAS Cecil Field inorganic background data set values.

Concentrations of detected analytes in groundwater have been compared with RBCs for tap water and GCTLs and, where applicable, with NAS Cecil Field inorganic background data set (see Appendix A). Because no contaminants were detected at concentrations in excess of NAS Cecil Field inorganic background data set values or GTCLs, no HI or ELCR was calculated and no further human health risk evaluation is required.

3.2 ECOLOGICAL PRELIMINARY RISK EVALUATION. Potential exposure pathways and ecological habitat associated with Facility 200 were characterized by HLA ecological risk assessors in June 1996. No complete exposure pathway to groundwater was identified within the study area. Therefore, this ecological risk evaluation only addresses potential effects to ecological receptors exposed to surface water and sediment.

3.2.1 **Sediment** Sixteen inorganic analytes, 2-butanone, endosulfan II, and endrin were detected in the sediment sample collected from the drainage ditch west of Facility 200. No inorganic analytes were detected at concentrations in excess of NAS Cecil Field inorganic background data set values.

A table comparing the concentrations of detected analytes in sediment to ecological screening criteria for benthic receptors is presented in Appendix A. USEPA Region IV Sediment Screening Values (USEPA, 1995) and Threshold Effect Levels developed for the State of Florida (MacDonald Environmental Sciences, 1994) are the primary screening criteria. No screening criteria are available for 2-butanone and endosulfan II. The detected concentration of endrin did not exceed the primary screening values.

3.2.2 **Surface Water** Twelve inorganic analytes were detected in the surface water sample collected from the drainage ditch west of Facility 200. No other compounds were detected in the sample. Copper was the only analyte detected at a concentration in excess of NAS Cecil Field inorganic background data set values and surface water quality screening criteria. The surface water sample collected contained 26.7 micrograms per liter ($\mu g/\ell$) of copper. Surface water quality screening criteria for copper are dependent upon the hardness of the water. The hardness of the water sample collected from the drainage ditch is 220 milligrams

per liter (as $CaCO_3$). The Acute Federal Surface Water Toxic Criteria and the Florida Surface Water Quality Standard for Class I Waters for copper under these conditions are 36 $\mu g/\ell$ and 23 $\mu g/\ell$, respectively. Equations and values used to calculate these criteria are provided in 40 Code of Federal Regulations 131.36, July 1997, and Chapter 62-302, Florida Administrative Code, December 1996.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon the information obtained for this assessment, site activities in the vicinity of Facility 200 may have resulted in the release of inorganic and organic compounds to groundwater, surface water, and sediment. However the concentration of detected analytes do not represent a hazard to human health. The concentration of copper detected in surface water collected in the study area is slightly in excess of the Florida Surface Water Quality Standard.

Environmental concerns associated with USTs at Facility 200 have been evaluated separately. Excessively contaminated soil was encountered adjacent to the oil-water separator during sampling in accordance with the TMP. Therefore, the color classification for Facility 200 should be changed from Gray to Blue, to indicate that there has been a petroleum release. Additional sampling, in accordance with the TMP has been proposed in the Confirmatory Sampling Report for the former used-oil UST. No other environmental concerns are outstanding.

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USEPA. 1998. *Risk-Based Concentration Table*. Region III. Philadelphia, Pennsylvania.

APPENDIX A

SOIL BORING LOG AND PRELIMINARY RISK EVALUATION TABLES

TITLE: NAS Cecil Field BRAC	**LOG of WELL:** CEF-200-1S	**BORING NO.** CEF-200-1S
CLIENT: SOUTHDIVNAVFACENGCOM		**PROJECT NO:** 08520-85
CONTRACTOR: Alliance Environmental, Inc.	**DATE STARTED:** 12-4-95	**COMPLTD:** 12-4-95
METHOD: Auger	**CASE SIZE:** 2 in.	**SCREEN INT.:** 3 - 13 ft.	**PROTECTION LEVEL:** D
TOC ELEV.: FT.	**MONITOR INST.:** PID	**TOT DPTH:** 14.0FT.	**DPTH TO ▽** 4.0 FT.
LOGGED BY: R. Holloway	**WELL DEVELOPMENT DATE:**	**SITE:** 60 - 200 Hobby Shop

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				0.2	SILTY SAND (SM): 100%, black to very dark grayish brown, quartz, fine- to very fine-grained, subrounded to subangular, well sorted.		SM	posthole	
2									
3				0				posthole	
4									▽
5				0.6				2,1,1,2	
6									
7				1.0				3,4,3,17	
8									
9									
10									
11									
12									
13									
14									
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29									
30									

ABB ENVIRONMENTAL SERVICES, INC.

Preliminary Risk Evaluation Table for Analytes Detected in Groundwater
Facility 200, Naval Air Station Cecil Field

Analyte[1]	0G00101	Screening Values BKGRD	GCTL	RBC(T)	Calculated Risk Values[2] ELCR	HQ
Volatile Organic Compound						
Acetone	70		700	3700 n		
bis(2-Ethylhexyl) phthalate	2.2		6	4.8 c		
Inorganic Analytes						
*Aluminum	560	13100	200	37000 n		
*Arsenic	3.7	7.1	50	0.045 c		
Barium	12.3	88.2	2000	2600 n		
Calcium	21600	81100				
*Iron	357	7760	300	11000 n		
Magnesium	3190	10000				
Manganese	15.5	96.2	50	840 n		
Potassium	2060	4330				
Sodium	5460	16500	160000			
Vanadium	2.5	20.2	49	260 n		
Cyanide	3.6	22	200	730 n		
General Chemistry						
Total petroleum hydrocarbons	0.5		5000			

Notes:

[1] All detected analytes are reported. Concentrations and screening values are expressed in ug/l

[2] ELCR and HQ are only calculated for analytes detected at concentrations in excess of BKGRD and GCTL

*= Background screening criteria or GCTLs have been exceeded

BKGRD= NAS Cecil Field Inorganic Background Data Set

GCTL = Groundwater Cleanup Target Levels, FDEP, Chapter 62-785, Florida Administrative Code

RBC(T)= Risk-based Concentration (Tap Water), USEPA Region III, April 1998

n=non-carcinogenic risk

ELCR = calculated excess lifetime cancer risk, based on RBC(T) values.

(ELCR = maximum detected concentration/RBC(T) * 1E-06)

HQ = calculated Hazard Quotient for non-carcinogenic analytes

(HQ=maximum detected concentration/RBC(T))

Preliminary Ecological Risk Evaluation Table for Analytes Detected in Sediment Samples
Facility 200, Naval Air Station Cecil Field

	Sample	Screening Criteria							
Analyte[1]	60D00101	BKGRD	Region IV[2]	ER-L[3]	ER-M[4]	LEL[5]	SQG[6]	TEL[7]	PEL[8]
Volatile Organic Compounds									
2-Butanone	0.003								
Pesticides/PCBs									
Endosulfan II	0.00025								
*Endrin	0.00027		0.0033	0.00002	0.045	0.003	0.00004		
Inorganic Analytes									
Aluminum	5110	10200							
Arsenic	0.77	2.6	7.24	8.2	70	6		7.24	41.6
Barium	5.9	36.1							
Calcium	2470	5920							
Chromium	9.4	16	52.7	81	370	26		52.3	160
Cobalt	0.58	3				50			
Copper	2	12.5	18.7	34	270	16		18.7	108
Iron	842	3330				20000			
Lead	4.9	44.6	30.2	46.7	218	31		30.2	112
Magnesium	200	379							
Manganese	4.1	17				460			
Nickel	1.4	7	15.9	20.9	51.6	16		15.9	42.8
Potassium	48.9	289							
Vanadium	5.6	15							
Zinc	5.4	92	124	150	410	120		124	271
*Cyanide	0.18	1.2				0.1			
General Chemistry									
Total petroleum hydrocarbons	21								
Total organic carbon	6300								

Notes:

* Asterisk indicates screening criteria has been exceeded.

[1] All Analytes are reported in mg/kg.

Screening Criteria (refer to the Project Operations Plan, ABB-ES, 1995, Appendix A for details, acronyms and definitions)

[2] Draft USEPA Region IV Waste Management Division Sediment Screening Values. (USEPA, 1195)

[3] NOAA ER-L Sediment Guidelines, protective of 90% of the test population of benthic organisms

[4] NOAA ER-M Sediment Guidelines, protective of 50% of the test population of benthic organisms

[5] OME LEL Provincial Sediment Quality Guidelines (Persaud et al., 1992)

[6] SQG USEPA Sediment Quality Guidelines (USEPA, 1988, 1993)

[7] TEL Sediment quality Assessment Guidelines, MacDonald Environmental Sciences, Ltd., 1994.

[8] PEL Sediment quality Assessment Guidelines, MacDonald Environmental Sciences, Ltd., 1994.

Preliminary Ecological Risk Evaluation Table for Analytes Detected in Surface Water
Facility 200, Naval Air Station Cecil Field

	Sample	Screening Criteria				
Analyte[1]	60W00101	BKGRD	Region IV[2]	Ambient[3]	Florida[4]	AQUIRE[5]
*Aluminum	105	1042	87	87		50
Barium	28.2	43.7				8900
*Calcium	51700	43000				
*Copper	26.7	7.35	7	7	7	1.5
Iron	126	3027	1000	1000	1000	3700
*Magnesium	19000	5575				
Manganese	11.7	49.25				280
*Potassium	13300	2057				
*Sodium	14300	12175				
Thallium	2.5	10.05	4	40	6.3	82
Vanadium	1.8	4.5				128
*Zinc	25.4	51.35	59	59	59	17.1

Notes:
BKGRD=NAS Cecil Field Inorganic Background Data Set
* Asterisk indicates screening criteria has been exceeded.

[1]All values are reported in ug/l
Screening Criteria
(refer to the Project Operations Plan, ABB-ES, 1995, Appendix A for details, acronyms and definitions)
[2] USEPA Region IV Waste Management Division Chronic Freshwater Surface Water Screening Values for Hazardous Waste Sites (November, 1995)
[3] Federal Ambient Water Criteria (USEPA 1988, 1991)
[4] Florida Administrative Code Surface water Quality Standards, Chapter 62-302 (1995)
[5] Reported toxicity values from the USEPA Aquire database

APPENDIX B

LABORATORY ANALYTICAL DATA

NAS CECIL FIELD -- FACILITY 200
GROUNDWATER -- VOLATILES -- REPORT REQUEST NO. 10098

Lab Sample Number:	C35D2
Site	CECILBRAC2
Locator	60G00101
Collect Date:	27-FEB-96

	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW				
Chloromethane	5	U	ug/l	5
Bromomethane	5	U	ug/l	5
Vinyl chloride	5	U	ug/l	5
Chloroethane	5	U	ug/l	5
Methylene chloride	2	U	ug/l	2
Acetone	70		ug/l	5
Carbon disulfide	2	U	ug/l	2
1,1-Dichloroethene	2	U	ug/l	2
1,1-Dichloroethane	2	U	ug/l	2
1,2-Dichloroethene (total)	2	U	ug/l	2
Chloroform	2	U	ug/l	2
1,2-Dichloroethane	2	U	ug/l	2
2-Butanone	5	U	ug/l	5
1,1,1-Trichloroethane	2	U	ug/l	2
Carbon tetrachloride	2	U	ug/l	2
Bromodichloromethane	2	U	ug/l	2
1,2-Dichloropropane	2	U	ug/l	2
cis-1,3-Dichloropropene	2	U	ug/l	2
Trichloroethene	2	U	ug/l	2
Dibromochloromethane	2	U	ug/l	2
1,1,2-Trichloroethane	2	U	ug/l	2
Benzene	2	U	ug/l	2
trans-1,3-Dichloropropene	2	U	ug/l	2
Bromoform	2	U	ug/l	2
4-Methyl-2-pentanone	5	U	ug/l	5
2-Hexanone	5	U	ug/l	5
Tetrachloroethene	2	U	ug/l	2
Toluene	2	U	ug/l	2
1,1,2,2-Tetrachloroethane	2	U	ug/l	2
Chlorobenzene	2	U	ug/l	2
Ethylbenzene	2	U	ug/l	2
Styrene	2	U	ug/l	2
Xylenes (total)	2	U	ug/l	2

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- FACILITY 200
GROUNDWATER -- SEMIVOLATILES -- REPORT REQUEST NO. 10099

Lab Sample Number:	C35D2
Site	CECILBRAC2
Locator	60G00101
Collect Date:	27-FEB-96

	VALUE	QUAL	UNITS	DL
CLP SEMIVOLATILES 90-SOW				
Phenol	10	U	ug/l	10
bis(2-Chloroethyl) ether	10	U	ug/l	10
2-Chlorophenol	10	U	ug/l	10
1,3-Dichlorobenzene	10	U	ug/l	10
1,4-Dichlorobenzene	10	U	ug/l	10
1,2-Dichlorobenzene	10	U	ug/l	10
2-Methylphenol	10	U	ug/l	10
2,2-oxybis(1-Chloropropane)	10	U	ug/l	10
4-Methylphenol	10	U	ug/l	10
N-Nitroso-di-n-propylamine	10	U	ug/l	10
Hexachloroethane	10	U	ug/l	10
Nitrobenzene	10	U	ug/l	10
Isophorone	10	U	ug/l	10
2-Nitrophenol	10	U	ug/l	10
2,4-Dimethylphenol	10	U	ug/l	10
bis(2-Chloroethoxy) methane	10	U	ug/l	10
2,4-Dichlorophenol	10	U	ug/l	10
1,2,4-Trichlorobenzene	10	U	ug/l	10
Naphthalene	10	U	ug/l	10
4-Chloroaniline	10	U	ug/l	10
Hexachlorobutadiene	10	U	ug/l	10
4-Chloro-3-methylphenol	10	U	ug/l	10
2-Methylnaphthalene	10	U	ug/l	10
Hexachlorocyclopentadiene	10	U	ug/l	10
2,4,6-Trichlorophenol	10	U	ug/l	10
2,4,5-Trichlorophenol	25	U	ug/l	25
2-Chloronaphthalene	10	U	ug/l	10
2-Nitroaniline	25	U	ug/l	25
Dimethylphthalate	10	U	ug/l	10
Acenaphthylene	10	U	ug/l	10
2,6-Dinitrotoluene	10	U	ug/l	10
3-Nitroaniline	25	U	ug/l	25
Acenaphthene	10	U	ug/l	10
2,4-Dinitrophenol	25	U	ug/l	25
4-Nitrophenol	25	U	ug/l	25
Dibenzofuran	10	U	ug/l	10
2,4-Dinitrotoluene	10	U	ug/l	10
Diethylphthalate	10	U	ug/l	10
4-Chlorophenyl-phenylether	10	U	ug/l	10
Fluorene	10	U	ug/l	10
4-Nitroaniline	25	U	ug/l	25
4,6-Dinitro-2-methylphenol	25	U	ug/l	25
N-Nitrosodiphenylamine	10	U	ug/l	10
4-Bromophenyl-phenylether	10	U	ug/l	10
Hexachlorobenzene	10	U	ug/l	10
Pentachlorophenol	25	U	ug/l	25
Phenanthrene	10	U	ug/l	10
Anthracene	10	U	ug/l	10
Carbazole	10	U	ug/l	10
Di-n-butylphthalate	10	U	ug/l	10

NAS CECIL FIELD -- FACILITY 200
GROUNDWATER -- SEMIVOLATILES -- REPORT REQUEST NO. 10099

Lab Sample Number:	C35D2
Site	CECILBRAC2
Locator	60G00101
Collect Date:	27-FEB-96

	VALUE	QUAL	UNITS	DL
Fluoranthene	10	U	ug/l	10
Pyrene	10	U	ug/l	10
Butylbenzylphthalate	10	U	ug/l	10
3,3-Dichlorobenzidine	10	U	ug/l	10
Benzo (a) anthracene	10	U	ug/l	10
Chrysene	10	U	ug/l	10
bis(2-Ethylhexyl) phthalate	2.2	J	ug/l	10
Di-n-octylphthalate	10	U	ug/l	10
Benzo (b) fluoranthene	10	U	ug/l	10
Benzo (k) fluoranthene	10	U	ug/l	10
Benzo (a) pyrene	10	U	ug/l	10
Indeno (1,2,3-cd) pyrene	10	U	ug/l	10
Dibenzo (a,h) anthracene	10	U	ug/l	10
Benzo (g,h,i) perylene	10	U	ug/l	10

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- FACILITY 200
GROUNDWATER -- PESTICIDES & PCBs -- REPORT REQUEST NO. 10100

Lab Sample Number:	C35D2
Site	CECILBRAC2
Locator	60G00101
Collect Date:	27-FEB-96

	VALUE	QUAL	UNITS	DL
CLP PESTICIDES/PCBS 90-SOW				
alpha-BHC	.05	U	ug/l	.05
beta-BHC	.05	U	ug/l	.05
delta-BHC	.05	U	ug/l	.05
gamma-BHC (Lindane)	.05	U	ug/l	.05
Heptachlor	.05	U	ug/l	.05
Aldrin	.05	U	ug/l	.05
Heptachlor epoxide	.05	U	ug/l	.05
Endosulfan I	.05	U	ug/l	.05
Dieldrin	.1	U	ug/l	.1
4,4-DDE	.1	U	ug/l	.1
Endrin	.1	U	ug/l	.1
Endosulfan II	.1	U	ug/l	.1
4,4-DDD	.1	U	ug/l	.1
Endosulfan sulfate	.1	U	ug/l	.1
4,4-DDT	.1	U	ug/l	.1
Methoxychlor	.5	U	ug/l	.5
Endrin ketone	.1	U	ug/l	.1
Endrin aldehyde	.1	U	ug/l	.1
alpha-Chlordane	.05	U	ug/l	.05
gamma-Chlordane	.05	U	ug/l	.05
Toxaphene	5	U	ug/l	5
Aroclor-1016	1	U	ug/l	1
Aroclor-1221	2	U	ug/l	2
Aroclor-1232	1	U	ug/l	1
Aroclor-1242	1	U	ug/l	1
Aroclor-1248	1	U	ug/l	1
Aroclor-1254	1	U	ug/l	1
Aroclor-1260	1	U	ug/l	1

U = NOT DETECTED J = ESTIMATED VALUE
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NAS CECIL FIELD -- FACILITY 200
SURFACE WATER -- TRPH -- REPORT REQUEST NO. 10097

Lab Sample Number:	A6G2001050
Site	CECILBRAC2
Locator	60W00101
Collect Date:	19-JUL-96

	VALUE	QUAL	UNITS	DL
TPH				
Total petroleum hydrocarbons	.5	U	mg/l	.5

U = NOT DETECTED J = ESTIMATED VALUE
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R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- FACILITY 200
GROUNDWATER -- INORGANICS -- REPORT REQUEST NO. 10101

Lab Sample Number:	C35D2			
Site	CECILBRAC2			
Locator	60G00101			
Collect Date:	27-FEB-96			
	VALUE	QUAL	UNITS	DL
CLP METALS AND CYANIDE				
Aluminum	560		ug/l	200
Antimony	2	U	ug/l	60
Arsenic	3.7	J	ug/l	10
Barium	12.3	J	ug/l	200
Beryllium	1	U	ug/l	5
Cadmium	1	U	ug/l	5
Calcium	21600		ug/l	5000
Chromium	9	U	ug/l	10
Cobalt	2	U	ug/l	50
Copper	2	U	ug/l	25
Iron	357		ug/l	100
Lead	2	U	ug/l	3
Magnesium	3190	J	ug/l	5000
Manganese	15.5		ug/l	15
Mercury	.1	U	ug/l	.2
Nickel	2	U	ug/l	40
Potassium	2060	J	ug/l	5000
Selenium	3	U	ug/l	5
Silver	1	U	ug/l	10
Sodium	5460		ug/l	5000
Thallium	4	U	ug/l	10
Vanadium	2.5	J	ug/l	50
Zinc	2	U	ug/l	20
Cyanide	3.6	J	ug/l	10

U = NOT DETECTED J = ESTIMATED VALUE
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NAS CECIL FIELD -- FACILITY 200
GROUNDWATER -- TRPH -- REPORT REQUEST NO. 10102

Lab Sample Number:	A6B2901340
Site	CECILBRAC2
Locator	60G00101
Collect Date:	27-FEB-96

	VALUE	QUAL	UNITS	DL
TPH				
Total petroleum hydrocarbons	.5		mg/l	.5

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- FACILITY 200
SEDIMENT -- VOLATILES -- REPORT REQUEST NO. 10088

Lab Sample Number:	C4WN6			
Site	CECILBRAC2			
Locator	60D00101			
Collect Date:	19-JUL-96			
	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW				
Chloromethane	13	U	ug/kg	13
Bromomethane	13	U	ug/kg	13
Vinyl chloride	13	U	ug/kg	13
Chloroethane	13	U	ug/kg	13
Methylene chloride	6	U	ug/kg	6
Acetone	13	U	ug/kg	13
Carbon disulfide	6	U	ug/kg	6
1,1-Dichloroethene	6	U	ug/kg	6
1,1-Dichloroethane	6	U	ug/kg	6
1,2-Dichloroethene (total)	6	U	ug/kg	6
Chloroform	6	U	ug/kg	6
1,2-Dichloroethane	6	U	ug/kg	6
2-Butanone	3	J	ug/kg	13
1,1,1-Trichloroethane	6	U	ug/kg	6
Carbon tetrachloride	6	U	ug/kg	6
Bromodichloromethane	6	U	ug/kg	6
1,2-Dichloropropane	6	U	ug/kg	6
cis-1,3-Dichloropropene	6	U	ug/kg	6
Trichloroethene	6	U	ug/kg	6
Dibromochloromethane	6	U	ug/kg	6
1,1,2-Trichloroethane	6	U	ug/kg	6
Benzene	6	U	ug/kg	6
trans-1,3-Dichloropropene	6	U	ug/kg	6
Bromoform	6	U	ug/kg	6
4-Methyl-2-pentanone	13	U	ug/kg	13
2-Hexanone	13	U	ug/kg	13
Tetrachloroethene	6	U	ug/kg	6
Toluene	6	U	ug/kg	6
1,1,2,2-Tetrachloroethane	6	U	ug/kg	6
Chlorobenzene	6	U	ug/kg	6
Ethylbenzene	6	U	ug/kg	6
Styrene	6	U	ug/kg	6
Xylenes (total)	6	U	ug/kg	6

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NAS CECIL FIELD -- FACILITY 200
SEDIMENT -- SEMIVOLATILES -- REPORT REQUEST NO. 10089

Lab Sample Number:	C4WN6
Site	CECILBRAC2
Locator	60D00101
Collect Date:	19-JUL-96

	VALUE	QUAL	UNITS	DL
CLP SEMIVOLATILES 90-SOW				
Phenol	420	U	ug/kg	420
bis(2-Chloroethyl) ether	420	U	ug/kg	420
2-Chlorophenol	420	U	ug/kg	420
1,3-Dichlorobenzene	420	U	ug/kg	420
1,4-Dichlorobenzene	420	U	ug/kg	420
1,2-Dichlorobenzene	420	U	ug/kg	420
2-Methylphenol	420	U	ug/kg	420
2,2-oxybis(1-Chloropropane)	420	U	ug/kg	420
4-Methylphenol	420	U	ug/kg	420
N-Nitroso-di-n-propylamine	420	U	ug/kg	420
Hexachloroethane	420	U	ug/kg	420
Nitrobenzene	420	U	ug/kg	420
Isophorone	420	U	ug/kg	420
2-Nitrophenol	420	U	ug/kg	420
2,4-Dimethylphenol	420	U	ug/kg	420
bis(2-Chloroethoxy) methane	420	U	ug/kg	420
2,4-Dichlorophenol	420	U	ug/kg	420
1,2,4-Trichlorobenzene	420	U	ug/kg	420
Naphthalene	420	U	ug/kg	420
4-Chloroaniline	420	U	ug/kg	420
Hexachlorobutadiene	420	U	ug/kg	420
4-Chloro-3-methylphenol	420	U	ug/kg	420
2-Methylnaphthalene	420	U	ug/kg	420
Hexachlorocyclopentadiene	420	U	ug/kg	420
2,4,6-Trichlorophenol	420	U	ug/kg	420
2,4,5-Trichlorophenol	1000	U	ug/kg	1000
2-Chloronaphthalene	420	U	ug/kg	420
2-Nitroaniline	1000	U	ug/kg	1000
Dimethylphthalate	420	U	ug/kg	420
Acenaphthylene	420	U	ug/kg	420
2,6-Dinitrotoluene	420	U	ug/kg	420
3-Nitroaniline	1000	U	ug/kg	1000
Acenaphthene	420	U	ug/kg	420
2,4-Dinitrophenol	1000	U	ug/kg	1000
4-Nitrophenol	1000	U	ug/kg	1000
Dibenzofuran	420	U	ug/kg	420
2,4-Dinitrotoluene	420	U	ug/kg	420
Diethylphthalate	420	U	ug/kg	420
4-Chlorophenyl-phenylether	420	U	ug/kg	420
Fluorene	420	U	ug/kg	420
4-Nitroaniline	1000	U	ug/kg	1000
4,6-Dinitro-2-methylphenol	1000	U	ug/kg	1000
N-Nitrosodiphenylamine	420	U	ug/kg	420
4-Bromophenyl-phenylether	420	U	ug/kg	420
Hexachlorobenzene	420	U	ug/kg	420
Pentachlorophenol	1000	U	ug/kg	1000
Phenanthrene	420	U	ug/kg	420
Anthracene	420	U	ug/kg	420
Carbazole	420	U	ug/kg	420
Di-n-butylphthalate	420	U	ug/kg	420

NAS CECIL FIELD -- FACILITY 200
SEDIMENT -- SEMIVOLATILES -- REPORT REQUEST NO. 10089

Lab Sample Number:	C4WN6			
Site	CECILBRAC2			
Locator	60D00101			
Collect Date:	19-JUL-96			
	VALUE	QUAL	UNITS	DL
Fluoranthene	420	U	ug/kg	420
Pyrene	420	U	ug/kg	420
Butylbenzylphthalate	420	U	ug/kg	420
3,3-Dichlorobenzidine	420	U	ug/kg	420
Benzo (a) anthracene	420	U	ug/kg	420
Chrysene	420	U	ug/kg	420
bis(2-Ethylhexyl) phthalate	420	U	ug/kg	420
Di-n-octylphthalate	420	U	ug/kg	420
Benzo (b) fluoranthene	420	U	ug/kg	420
Benzo (k) fluoranthene	420	U	ug/kg	420
Benzo (a) pyrene	420	U	ug/kg	420
Indeno (1,2,3-cd) pyrene	420	U	ug/kg	420
Dibenzo (a,h) anthracene	420	U	ug/kg	420
Benzo (g,h,i) perylene	420	U	ug/kg	420

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NAS CECIL FIELD -- FACILITY 200
SEDIMENT -- PESTICIDES & PCBs -- REPORT REQUEST NO. 10090

Lab Sample Number:	C4WN6
Site	CECILBRAC2
Locator	60D00101
Collect Date:	19-JUL-96

	VALUE	QUAL	UNITS	DL
CLP PESTICIDES/PCBS 90-SOW				
alpha-BHC	2.1	U	ug/kg	2.1
beta-BHC	2.1	U	ug/kg	2.1
delta-BHC	2.1	U	ug/kg	2.1
gamma-BHC (Lindane)	2.1	U	ug/kg	2.1
Heptachlor	2.1	U	ug/kg	2.1
Aldrin	2.1	U	ug/kg	2.1
Heptachlor epoxide	2.1	U	ug/kg	2.1
Endosulfan I	2.1	U	ug/kg	2.1
Dieldrin	4.3	U	ug/kg	4.3
4,4-DDE	4.3	U	ug/kg	4.3
Endrin	.27	J	ug/kg	4.3
Endosulfan II	.25	J	ug/kg	4.3
4,4-DDD	4.3	U	ug/kg	4.3
Endosulfan sulfate	4.3	U	ug/kg	4.3
4,4-DDT	4.3	U	ug/kg	4.3
Methoxychlor	21	U	ug/kg	21
Endrin ketone	4.3	U	ug/kg	4.3
Endrin aldehyde	4.3	U	ug/kg	4.3
alpha-Chlordane	2.1	U	ug/kg	2.1
gamma-Chlordane	2.1	U	ug/kg	2.1
Toxaphene	210	U	ug/kg	210
Aroclor-1016	43	U	ug/kg	43
Aroclor-1221	85	U	ug/kg	85
Aroclor-1232	43	U	ug/kg	43
Aroclor-1242	43	U	ug/kg	43
Aroclor-1248	43	U	ug/kg	43
Aroclor-1254	43	U	ug/kg	43
Aroclor-1260	43	U	ug/kg	43

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NAS CECIL FIELD -- FACILITY 200
SEDIMENT -- INORGANICS -- REPORT REQUEST NO. 10091

Lab Sample Number:	C4WN6
Site	CECILBRAC2
Locator	60D00101
Collect Date:	19-JUL-96

	VALUE	QUAL	UNITS	DL
CLP METALS AND CYANIDE				
Aluminum	5110		mg/kg	40
Antimony	.51	U	mg/kg	12
Arsenic	.77	J	mg/kg	2
Barium	5.9	J	mg/kg	40
Beryllium	.26	U	mg/kg	1
Cadmium	.26	U	mg/kg	1
Calcium	2470		mg/kg	1000
Chromium	9.4		mg/kg	2
Cobalt	.58	J	mg/kg	10
Copper	2	J	mg/kg	5
Iron	842		mg/kg	20
Lead	4.9		mg/kg	.6
Magnesium	200	J	mg/kg	1000
Manganese	4.1		mg/kg	3
Mercury	.06	U	mg/kg	.1
Nickel	1.4	J	mg/kg	8
Potassium	48.9	J	mg/kg	1000
Selenium	1	U	mg/kg	1
Silver	.26	U	mg/kg	2
Sodium	18.2	U	mg/kg	1000
Thallium	.51	U	mg/kg	2
Vanadium	5.6	J	mg/kg	10
Zinc	5.4	J	mg/kg	4
Cyanide	.18	UJ	mg/kg	.5

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NAS CECIL FIELD -- FACILITY 200
SEDIMENT -- TRPH -- REPORT REQUEST NO. 10092

Lab Sample Number:	A6G2001050			
Site	CECILBRAC2			
Locator	60D00101			
Collect Date:	19-JUL-96			
	VALUE	QUAL	UNITS	DL
TPH				
Total petroleum hydrocarbons	21		mg/kg	13

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NAS CECIL FIELD -- FACILITY 200
SURFACE WATER -- VOLATILES -- REPORT REQUEST NO. 10093

Lab Sample Number:	C4WN5
Site	CECILBRAC2
Locator	60W00101
Collect Date:	19-JUL-96

	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW				
Chloromethane	2	U	ug/l	2
Bromomethane	2	U	ug/l	2
Vinyl chloride	2	U	ug/l	2
Chloroethane	2	U	ug/l	2
Methylene chloride	1	U	ug/l	1
Acetone	2	U	ug/l	2
Carbon disulfide	1	U	ug/l	1
1,1-Dichloroethene	1	U	ug/l	1
1,1-Dichloroethane	1	U	ug/l	1
1,2-Dichloroethene (total)	1	U	ug/l	1
Chloroform	1	U	ug/l	1
1,2-Dichloroethane	1	U	ug/l	1
2-Butanone	2	U	ug/l	2
1,1,1-Trichloroethane	1	U	ug/l	1
Carbon tetrachloride	1	U	ug/l	1
Bromodichloromethane	1	U	ug/l	1
1,2-Dichloropropane	1	U	ug/l	1
cis-1,3-Dichloropropene	1	U	ug/l	1
Trichloroethene	1	U	ug/l	1
Dibromochloromethane	1	U	ug/l	1
1,1,2-Trichloroethane	1	U	ug/l	1
Benzene	1	U	ug/l	1
trans-1,3-Dichloropropene	1	U	ug/l	1
Bromoform	1	U	ug/l	1
4-Methyl-2-pentanone	2	U	ug/l	2
2-Hexanone	2	U	ug/l	2
Tetrachloroethene	1	U	ug/l	1
Toluene	1	U	ug/l	1
1,1,2,2-Tetrachloroethane	1	U	ug/l	1
Chlorobenzene	1	U	ug/l	1
Ethylbenzene	1	U	ug/l	1
Styrene	1	U	ug/l	1
Xylenes (total)	1	U	ug/l	1

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NAS CECIL FIELD -- FACILITY 200
SURFACE WATER -- SEMIVOLATILES -- REPORT REQUEST NO. 10094

Lab Sample Number:	C4WN5
Site	CECILBRAC2
Locator	60W00101
Collect Date:	19-JUL-96

	VALUE	QUAL	UNITS	DL
CLP SEMIVOLATILES 90-SOW				
Phenol	10	U	ug/l	10
bis(2-Chloroethyl) ether	10	U	ug/l	10
2-Chlorophenol	10	U	ug/l	10
1,3-Dichlorobenzene	10	U	ug/l	10
1,4-Dichlorobenzene	10	U	ug/l	10
1,2-Dichlorobenzene	10	U	ug/l	10
2-Methylphenol	10	U	ug/l	10
2,2-oxybis(1-Chloropropane)	10	U	ug/l	10
4-Methylphenol	10	U	ug/l	10
N-Nitroso-di-n-propylamine	10	U	ug/l	10
Hexachloroethane	10	U	ug/l	10
Nitrobenzene	10	U	ug/l	10
Isophorone	10	U	ug/l	10
2-Nitrophenol	10	U	ug/l	10
2,4-Dimethylphenol	10	U	ug/l	10
bis(2-Chloroethoxy) methane	10	U	ug/l	10
2,4-Dichlorophenol	10	U	ug/l	10
1,2,4-Trichlorobenzene	10	U	ug/l	10
Naphthalene	10	U	ug/l	10
4-Chloroaniline	10	U	ug/l	10
Hexachlorobutadiene	10	U	ug/l	10
4-Chloro-3-methylphenol	10	U	ug/l	10
2-Methylnaphthalene	10	U	ug/l	10
Hexachlorocyclopentadiene	10	U	ug/l	10
2,4,6-Trichlorophenol	10	U	ug/l	10
2,4,5-Trichlorophenol	25	U	ug/l	25
2-Chloronaphthalene	10	U	ug/l	10
2-Nitroaniline	25	U	ug/l	25
Dimethylphthalate	10	U	ug/l	10
Acenaphthylene	10	U	ug/l	10
2,6-Dinitrotoluene	10	U	ug/l	10
3-Nitroaniline	25	U	ug/l	25
Acenaphthene	10	U	ug/l	10
2,4-Dinitrophenol	25	U	ug/l	25
4-Nitrophenol	25	U	ug/l	25
Dibenzofuran	10	U	ug/l	10
2,4-Dinitrotoluene	10	U	ug/l	10
Diethylphthalate	10	U	ug/l	10
4-Chlorophenyl-phenylether	10	U	ug/l	10
Fluorene	10	U	ug/l	10
4-Nitroaniline	25	U	ug/l	25
4,6-Dinitro-2-methylphenol	25	U	ug/l	25
N-Nitrosodiphenylamine	10	U	ug/l	10
4-Bromophenyl-phenylether	10	U	ug/l	10
Hexachlorobenzene	10	U	ug/l	10
Pentachlorophenol	25	U	ug/l	25
Phenanthrene	10	U	ug/l	10
Anthracene	10	U	ug/l	10
Carbazole	10	U	ug/l	10
Di-n-butylphthalate	10	U	ug/l	10

NAS CECIL FIELD -- FACILITY 200
SURFACE WATER -- SEMIVOLATILES -- REPORT REQUEST NO. 10094

Lab Sample Number:	C4WN5
Site	CECILBRAC2
Locator	60W00101
Collect Date:	19-JUL-96

	VALUE	QUAL	UNITS	DL
Fluoranthene	10	U	ug/l	10
Pyrene	10	U	ug/l	10
Butylbenzylphthalate	10	U	ug/l	10
3,3-Dichlorobenzidine	10	U	ug/l	10
Benzo (a) anthracene	10	U	ug/l	10
Chrysene	10	U	ug/l	10
bis(2-Ethylhexyl) phthalate	10	U	ug/l	10
Di-n-octylphthalate	10	U	ug/l	10
Benzo (b) fluoranthene	10	U	ug/l	10
Benzo (k) fluoranthene	10	U	ug/l	10
Benzo (a) pyrene	10	U	ug/l	10
Indeno (1,2,3-cd) pyrene	10	U	ug/l	10
Dibenzo (a,h) anthracene	10	U	ug/l	10
Benzo (g,h,i) perylene	10	U	ug/l	10

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NAS CECIL FIELD -- FACILITY 200
SURFACE WATER -- PESTICIDES & PCBs -- REPORT REQUEST NO. 10095

Lab Sample Number:	C4WN5
Site	CECILBRAC2
Locator	60W00101
Collect Date:	19-JUL-96

	VALUE	QUAL	UNITS	DL
CLP PESTICIDES/PCBS 90-SOW				
alpha-BHC	.05	U	ug/l	.05
beta-BHC	.05	U	ug/l	.05
delta-BHC	.05	U	ug/l	.05
gamma-BHC (Lindane)	.05	U	ug/l	.05
Heptachlor	.05	U	ug/l	.05
Aldrin	.05	U	ug/l	.05
Heptachlor epoxide	.05	U	ug/l	.05
Endosulfan I	.05	U	ug/l	.05
Dieldrin	.1	U	ug/l	.1
4,4-DDE	.1	U	ug/l	.1
Endrin	.1	U	ug/l	.1
Endosulfan II	.1	U	ug/l	.1
4,4-DDD	.1	U	ug/l	.1
Endosulfan sulfate	.1	U	ug/l	.1
4,4-DDT	.1	U	ug/l	.1
Methoxychlor	.5	U	ug/l	.5
Endrin ketone	.1	U	ug/l	.1
Endrin aldehyde	.1	U	ug/l	.1
alpha-Chlordane	.05	U	ug/l	.05
gamma-Chlordane	.05	U	ug/l	.05
Toxaphene	5	U	ug/l	5
Aroclor-1016	1	U	ug/l	1
Aroclor-1221	2	U	ug/l	2
Aroclor-1232	1	U	ug/l	1
Aroclor-1242	1	U	ug/l	1
Aroclor-1248	1	U	ug/l	1
Aroclor-1254	1	U	ug/l	1
Aroclor-1260	1	U	ug/l	1

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R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- FACILITY 200
SURFACE WATER -- INORGANICS -- REPORT REQUEST NO. 10096

Lab Sample Number:	C4WN5			
Site	CECILBRAC2			
Locator	60W00101			
Collect Date:	19-JUL-96			
	VALUE	QUAL	UNITS	DL
CLP METALS AND CYANIDE				
Aluminum	105	J	ug/l	200
Antimony	2	U	ug/l	60
Arsenic	3	U	ug/l	10
Barium	28.2	J	ug/l	200
Beryllium	1	U	ug/l	5
Cadmium	1	U	ug/l	5
Calcium	51700		ug/l	5000
Chromium	2	U	ug/l	10
Cobalt	1	U	ug/l	50
Copper	26.7		ug/l	25
Iron	126		ug/l	100
Lead	2	U	ug/l	3
Magnesium	19000		ug/l	5000
Manganese	11.7	J	ug/l	15
Mercury	.1	U	ug/l	.2
Nickel	2	U	ug/l	40
Potassium	13300		ug/l	5000
Selenium	4	U	ug/l	5
Silver	1	U	ug/l	10
Sodium	14300	J	ug/l	5000
Thallium	2.5	J	ug/l	10
Vanadium	1.8	J	ug/l	50
Zinc	25.4		ug/l	20
Cyanide	3	U	ug/l	10

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE